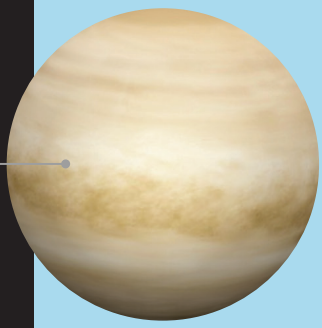
Our Natural Place *In the Big Picture*

The average temperature at the surface of a planet is controlled by several factors: distance from the Sun, gases in the atmosphere, and clouds.

Mercury

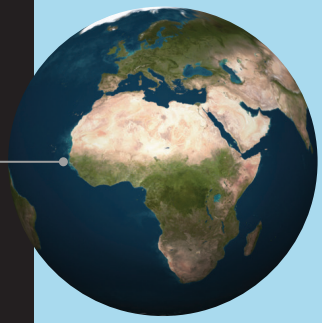
Mercury is closest to the Sun, and has no atmosphere or clouds. The surface of Mercury is very hot --- averaging 167 C (333 F) (oven temperature) but reaching temperatures of 427 C (800 F) during the day!

Venus



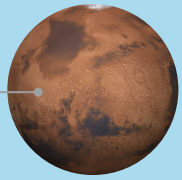
Venus, while farther from the Sun, is drastically hotter than Mercury because of its dense carbon dioxide atmosphere and overcast clouds, which retain heat.

Earth



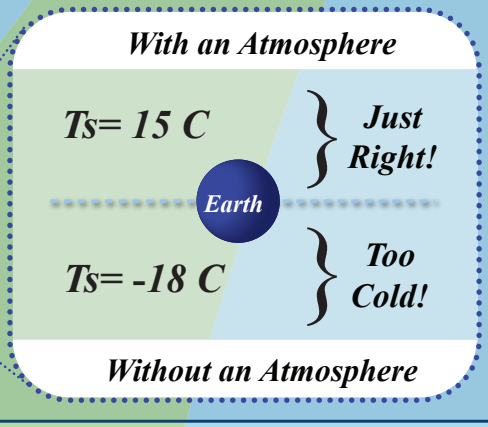
What about **Earth**? Based only on its distance from the Sun, the Earth's average temperature would be -18 C (0 F) --- too cold for life as we know it. Even though clouds cool the surface, gases in Earth's atmosphere, through a process called the greenhouse effect, retains heat to increase the average surface temperature to 15 C (59 F) ---a comfortable temperature for life.

Mars



Mars, much farther from the Sun, has a very thin atmosphere and is quite cold.

Planet	*Distance from the Sun (Millions of km)*	*Average Surface Temp. (C)*
Mercury	*58*	*167*
Venus	*108*	*464*
Earth	*149*	
Mars	*228*	*-65*



*To scale by distance

*To scale by size